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substitute for form 1449/PTO

Sheet 1

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

of 2

Complete if Known						
Application Number	10/766,801					
Filing Date	27 January 2004					
First Named Inventor	Ron McCallister					
Art Unit						
Examiner Name						
Attaman Daglast Number	12200 020					

			U. S. PATENT	DOCUMENTS	
Examiner Initials*	Cite No.1	Document Number  Number-Kind Code <sup>2 (f known)</sup>	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
2/5		US- 2003/0227981	12/11/2003	Vella-Coleiro, et al	
		US- 2003/0076894	04/24/2003	Jin, et al.	
7		US- 2002/0180523	12/05/2002	Okubo, et al.	
7		<sup>US-</sup> 2004/0021517	02/05/2004	Irvine, et al.	
7		US- 2004/0013206	01/22/2004	Gamm, et al.	
1/,		US- 2003/0020538	01/30/2003	Kim	
7.		<sup>US-</sup> 5,760,646	06/02/1998	Belcher, et al.	
XB		<sup>US-</sup> 6,118,335	09/12/2000	Nielsen, et al.	
		<sup>US-</sup> 5,923,712	07/13/1999	Leyendecker, et al.	
		US-			
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	FOREIGN PATENT DOCUMENTS								
	Cite No.1	Foreign Patent Document	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages				
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Substitu	te for form 1449/PTO			Application Number	10/766,801	
INF	ORMATION	N DIS	CLOSURE	Filing Date	27 January 2004	
STA	TEMENT	BY A	PPLICANT	First Named Inventor	Ron D. McCallister	
	INFORMATION DISCLOSURI STATEMENT BY APPLICAN  (Use as many sheets as necessary)		Art Unit			
	(Use as many sh	eets as r	ecessary)	Examiner Name		
Sheet	2	of	2	Attorney Docket Number	2298-030	

		NON PATENT LITERATURE DOCUMENTS	
Examiner Initials*	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T²
of 15		GLENTIS, KOUKOULAS, & KALOUPTSIDIS "Efficient Algorithms for Volterra System Identification" IEEE Transactions on Signal Processing, Vol 47, No. 11, Nov 1999.	
1		DING, RAICH, & ZHOU "A Hammerstein Predistortion Linearization Design Based on the Indirect Learning Architecture" Georgia Inst. of Tech. School of Elect. & Comp. Engineering.	
		RAZZAGHI & CHANG "A 10-b,1GSample/s ADC using SiGe BiCMOS Technology" Electrical Engineering Department, UCLA.	
		DANESHRAD "DSP VLSI Engine for Electronic Linearization of Fiber Optic Links" Wireless Integrated Systems Research Group, UCLA, 02/27/2001.	
		FOX "Analysis and Dynamic Range Enhancement of the Analog-to-Digital Interface in Multimode Radio Receivers" Virginia Polytechnic Inst. & State Univ. 02/1997.	
x B		HUMMELS "Linearization of ADCS and DACS for All-Digital Wide-Bandwidth Receivers" Depart. of Electrical & Comp. Engineering, Univ. of Maine, 09/09/1999.	
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Complete if Known Substitute for form 1449/PTO **Application Number** Filing Date INFORMATION DISCLOSURE First Named Inventor Ronald D McCallister STATEMENT BY APPLICANT Art Unit (Use as many sheets as necessary) **Examiner Name** Attorney Docket Number 2298-030

			U. S. PATEN	T DOCUMENTS	
Examiner Initials*	Cite No.	Document Number  Number-Kind Code <sup>2 (F Izzoert)</sup>	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
Ky/h		US- 5,778,029	07/07/1998	Kaufmann	
1		<sup>US-</sup> 6,282,247	08/28/2001	Shen	
		US- 6,222,878	04/24/2001	McCallister, et al.	
		<sup>US-</sup> 6,512,800	01/28/2003	Amir, et al.	
		<sup>US-</sup> 2002/0193078A1	12/19/2002	Shearer, III, et al.	
		<sup>US-</sup> 5,721,756	02/24/1998	Liebetreu, et al.	
		US- 5,949,832	09/07/1999	Liebetreu, et al.	
		US- 6,442,217	08/27/2002	Cochran	
		<sup>US-</sup> 5,049,832	09/17/1991	Cavers	
		US- 2003/0063683A1	04/03/2003	Shearer, III, et al.	
i		US- 2003/0063682A1	04/03/2003	Shearer, III	
		<sup>US-</sup> 6,141,390	10/31/2000	Cova	
		<sup>US-</sup> 5,867,065	02/02/1999	Leyendecker	
		us- 5,732,333	03/24/1998	Cox, et al.	
		US- 2003/0146787A1	08/07/2003	Hedberg, et al.	
11		US- 2003/0156658A1	08/21/2003	Dartois	
V		US- 2003/0123568A1	07/03/2003	Ophir, et al.	
MB		<sup>US-</sup> 2003/0179831A1	09/25/2003	Gupta, et al.	
xto		US- 2001/0005402A1	06/28/2001	Nagatani, et al.	

	FOREIGN PATENT DOCUMENTS									
	Cite No.1	Foreign Patent Document	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages					
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	Substitute for form 144 ar 10	Application Number			
	INFORMATION DISCLOSURE	Filing Date			
	INFORMATION DISCLOSURE	First Named Inventor	Ronald D McCallister		
	STATEMENT BY APPLICANT	Art Unit			
	(Use as many sheets as necessary)	Examiner Name			
$\overline{}$	Sheet 2 of 3	Attorney Docket Number	2298-030	フ	

<u> </u>	C:4-	D	Publication Date	Name of Patentee or	Pages, Columns, Lines, Where
Examiner Initials*	Cite No.	Document Number	MM-OD-YYYY	Applicant of Cited Document	Relevant Passages or Relevant
- 1	110.	Number-Kind Code <sup>2 (F known)</sup>		, uphasin or olice sees in a	Figures Appear
215		<sup>US-</sup> 5,113,414	05/12/1992	Karam, et al.	
1/1		<sup>US-</sup> 2002/0064236A1	05/30/2002	Matsuoka, et al.	
		us- 6,240,278	05/29/2001	Midya, et al.	
		<sup>US-</sup> 6,236,837	05/22/2001	Midya	
$\neg$		<sup>US-</sup> 4,910,698	03/20/1990	McCartney	
		<sup>US-</sup> 4,902,979	02/24/1990	Puckette, IV	
		US- 5,454,007	09/26/1995	Dutta	
$\top$		US- 4,888,557	12/19/1989	Puckette, IV, et al.	
1		US- 4,878,029	10/31/1989	Saulnier, et al.	
1		us- 4,270,179	05/26/1981	Sifford, et al.	
1 :		<sup>US-</sup> 4,290,139	09/15/1981	Walsh	
		<sup>US-</sup> 4,422,175	12/20/1983	Bingham, et al.	
Je		<sup>US-</sup> 4,633,482	12/30/1989	Sari	
NIS.		US- 4,053,837	10/11/1977	Ryan, et al.	
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	FOREIG	N PATENT DOCU	MENTS		
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	Country Code <sup>3</sup> "Number <sup>4</sup> "Kind Code <sup>5</sup> (if known)	MM-DD-YYYY		Or Relevant Figures Appear	T°
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		Cite Foreign Patent Document No.1	Cite No.1 Publication Date MM-DD-YYYY	Cite No.1 Publication Name of Patentee or Applicant of Cited Document MM-DD-YYYY	Cite Foreign Patent Document Publication Name of Patentee or Applicant of Cited Document Where Relevant Passages  MM-DD-YYYY  Publication Name of Patentee or Applicant of Cited Document Where Relevant Passages  Or Relevant Figures Appear

Examiner Date Signature Considered

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Substitute for form 1449/PTO  INFORMATION DISCLOSURE STATEMENT BY APPLICANT  (Use as many sheets as necessary)			Complete if Known		
			Applicati n Numb r		
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			First Named Inventor	Ronald D McCallister	
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Sheet 3	of	3	Attorney Docket Number	2298-030	

		NON PATENT LITERATURE DOCUMENTS			
Examiner Cite No.1		Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.			
		CAVERS, "The Effect of Quadrature Modulator and Demodulator Errors on Adaptive Digital Predistorters for Amplifier Linearization" IEEE Trans on Veh Tech, Vol46, #2, 05/97.			
1		DING & ZHOU, "Effects of Even-order Nonlinear Terms on Power Amplifier Modeling and Predistortion Linearization" IEEE Transactions on Vehicular Technology, 08/2002			
		GRASS, BODHISATYA & MAHARATNA, "A Dual-Mode Synchornous/Asynchronous CORDIC Processor" IHP, IM Technologiepark, 2002.			
		OHLSSON, "Studies on Implementation of Digital Filters With High Throughput and Low Power Consumption" Institute of Technology, Dept of Electrical Engineering, P 61-73, 06/03.			
		RAICH, QIAN & ZHOU, "Digital Baseband Predistortion of Nonlinear Power Amplifiers Using Orthogonal Polynomials" Proc. ICASSP 2003) p689-692, Hong Kong China 04/2003.			
		GODAVARTI "Multiple Antennas in Wireless Communications" Array Signal Processing and Channel Capacity" University of Michigan, P 16-52, 2001.			
		"Pact Application Note: Adaptive Filter Based on the LMS-Algorithm"			
wis.		CHOO "Mapping LMS Adaptive Filter IP Core to Multiplier-Array FPGA Architecture for High Channel-Density VOIP Line Echo Cancellation" CMP United Business Media, 2003.			
		WIDROW, MCCOOL & BALL, "The Complex LMS Algorithm" Information Systems Laboratory, Naval Undersea Center, Fleet Engineering Dept, 08/19/1974.			

Examiner	3 /	Date	5/12//
Signature	7	Considered	1/0/03

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